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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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27367 7590 12/18/2006
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| EXAMINER |
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CHUO, TONY SHENG HSIANG

| ART UNIT | PAPER NUMBER |
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1745

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 12/18/2006 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/790,627

Applicant(s)

MATHIOWETZ ET AL.

Examiner

Tony Chuo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 3/1/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/14/06 has been entered.

Response to Amendment

2. Claims 1-19 are currently pending. New claims 17-19 have been added. Claims 1-19 do overcome the previously stated 102 and 103 rejections. However, upon further considerations, claims 1-19 are rejected under the following new 103 rejections.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2, 4, 12-13, 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oweis et al (US 5651255) in view of Iwasaki et al (US 6325611).

The Oweis reference discloses a cover and process of covering an electrical energy

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storage cell comprising: a first layer "3" of thermally conductive material made of aluminum that is shaped to conform to an outer surface of the electrical energy storage cell; and a second layer "4" of thermally insulating material that is shaped to conform to an outer surface of the first layer (See Figure 1 and column 2, lines 28-33). However, Oweis et al does not expressly teach a hot spot on the storage cell during an external short circuit. The Iwasaki reference discloses an external short circuiting test that forms a hot spot on the cell near the lead member by heat generation due to the resistance of the lead member (See column 7, lines 13-22). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Oweis battery to include a hot spot on the storage cell during an external short circuit in order to confirm that the battery can maintain high safety even under the application of an extraordinarily high charge voltage. Examiner's note: It is implicit that when a hot spot is formed on the storage cell during an external short circuit, the thermally conductive first layer taught by Oweis et al is capable of spreading the heat flow over a portion of the outer surface of the first layer that is larger than the hot spot and the second layer taught by Oweis et al is capable of retarding the flow of heat to an outer surface of the second layer (See column 2, lines 28-33). It is further noted that although Oweis et al does not explicitly disclose using the battery in a combustible atmosphere, a recitation of intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. Since the Oweis battery is capable of performing the intended use, it meets the claims.

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5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oweis et al (US 5651255) in view of Iwasaki et al (US 6325611) as applied to claim 1 above, and further in view of Rouillard et al (US 6087036). However, Oweis et al as modified by Iwasaki does not expressly teach the temperature of the outer surface of the second layer that has a measured maximum temperature of 130 degrees centigrade or less during short circuit condition. The Rouillard reference discloses a temperature of the outer surface of the battery that has a measured maximum temperature of 130 degrees centigrade or less during short circuit condition (See column 8, line 59 to column 9, line 14). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Oweis/Iwasaki battery to maintain the temperature of the outer surface of the battery that has a measured maximum temperature of 130 degrees centigrade or less during short circuit condition in order to operate the battery below the maximum breakdown temperature of the cells.

6. Claims 5 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oweis et al (US 5651255) in view of Iwasaki et al (US 6325611) as applied to claims 1 and 12 above, and further in view of Dansui et al (US 2003/0013009). However, Oweis et al as modified by Iwasaki does not expressly teach a first layer of material that comprises copper. The Dansui reference discloses a battery housing made of a thermally conductive material such as copper (See paragraph [0026]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Oweis/Iwasaki battery to include a first layer of material that comprises copper in order to utilize a material that exhibits excellent thermal conductivity properties.

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7. Claims 6, 7, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oweis et al (US 5651255) in view of Iwasaki et al (US 6325611) as applied to claims 1 and 12 above, and further in view of Oosaki et al (US 5689173). However, Oweis et al as modified by Iwasaki et al does not expressly teach a second layer of material that comprises heat-shrink tubing or elastic material. The Oosaki reference discloses thermally insulating materials such as heat shrink tubing that is also an elastic material (See column 4, lines 20-22). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Oweis/Iwasaki battery to include a second layer of material that comprises heat-shrink tubing or elastic material in order to utilize a material that is inexpensive and easy to manufacture.

8. Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oweis et al (US 5651255) in view of Iwasaki et al (US 6325611) as applied to claims 1 and 12 above, and further in view of Bechtold et al (US 6007944). However, Oweis et al as modified by Iwasaki et al does not expressly teach a first layer that comprises two thermally conductive half-shells that each cover one side of a round surface of the energy storage cell. The Bechtold reference discloses two half shells that each cover one side of energy storage cell (See column 1, lines 37-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Oweis/Iwasaki battery to include a first layer that comprises two thermally conductive half-shells that each cover one side of a round surface of the energy storage cell in order to decrease the risk of a short circuit.

9. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al (US 5204194) in view of Oweis et al (US 5651255). The Miller reference

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discloses a multicell battery comprising: a plurality of electrical energy storage cells "24" & "26"; electrical connection leads "32"; a protective device including a fusible link "64" and electrical interconnections "50" that interconnect the plurality of electrical energy storage cells in series circuit with the protective device and the electrical connection leads; and a plastic resin shell "22" shaped to receive the plurality of covered cells and the protective device (See Figure 1 and 3 and column 3, lines 39-41). It also discloses in the event of excessive circuit current flow or short circuit, the fusible portion "64" melts due to excess heating (See column 3, lines 42-46). Examiner's note: It is implicit that as a result of the short circuit, a hot spot will be formed on the energy storage cells. However, Miller et al does not expressly teach a cell cover comprising a first layer of thermally conductive material that is shaped to conform to an outer surface of the electrical energy storage cell and a second layer of thermally insulating material that is shaped to conform to an outer surface of the first layer. The Oweis reference discloses a battery cover that comprises a first layer "3" of thermally conductive material that is shaped to conform to an outer surface of the electrical energy storage cell and a second layer "4" of thermally insulating material that is shaped to conform to an outer surface of the first layer (See Figure 1 and column 2, lines 28-33). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Miller battery to include a cell cover comprising a first layer of thermally conductive material that is shaped to conform to an outer surface of the electrical energy storage cell and a second layer of thermally insulating material that is shaped to conform to an outer surface of the first layer in order to provide a high efficiency thermal insulation structure for dissipating heat generated by the cell.

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10. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al (US 5204194) in view of Oweis et al (US 5651255) as applied to claims 9 and 10 above, and further in view of Maggert et al (US 6724170). However, Miller et al as modified by Oweis et al does not expressly teach a plastic resin shell that includes plastic resin separation bars positioned between the cells and the electrical interconnections to reduce shorting. The Maggert reference discloses a plastic casing "202" positioned between the cells and the electrical interconnections to prevent tabs from shorting (See column 3 line 66 to column 4 line 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Miller/Oweis battery to include separation bars in the plastic resin shell in order to prevent the tabs from shorting to either tabs or other cell housings.

11. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al (US 5204194) in view of Oweis et al (US 5651255) as applied to claim 9 above, and further in view of Iwasaki et al (US 6325611). However, Miller et al as modified by Oweis et al does not expressly teach a short circuit that is external to the battery. The Iwasaki reference discloses an external short circuiting test that forms a hot spot near the lead member by heat generation due to the resistance of the lead member (See column 7, lines 13-22). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Miller/Oweis battery to include a short circuit that is external to the battery in order to confirm that the battery can maintain high safety even under the application of an extraordinarily high charge voltage.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571) 272-0717. The examiner can normally be reached on M-F, 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's trainer, Susy Tsang-Foster can be reached on (571) 272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC


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PRIMARY EXAMINER